REMARKS

Claims 1-10 remain pending herein.

It is respectfully submitted that entry of the above amendments would be proper under 37 C.F.R. 1.116, since the amendments (1) do not increase the number of issues under consideration in this application, and (2) for the reasons discussed below, place the present application in condition for allowance. Accordingly, entry of the above amendments is respectfully requested.

It is respectfully requested that the U.S. PTO acknowledge having considered the information contained in the Identification of Copending Application filed on September 30, 2002. For the convenience of the U.S. PTO, attached is a copy of that Identification of Copending Application, which was filed together with payment of the fee under 37 C.F.R. 1.17(p).

Attached hereto as page 7, pursuant to Rule 1.121(c)(1)(ii), is a marked-up version of the amended claim.

The October 1, 2002 Office Action contains an indication that the Substitute Specification filed August 9, 2002 has not been entered, and a statement that "the statement as to a lack of new matter under 37 C.F.R. 1.125(b) is missing." It is respectfully noted that the required statement as to a lack of new matter is contained in the last sentence of page 1 of the Supplemental Amendment filed August 9, 2002. In any event, to preclude any further concerns, the applicants hereby state that the Substitute Specification filed on August 9, 2002 contains no new matter.

Claims 1, 2 and 9 were rejected under 35 U.S.C.§102(b) over Japanese 10 116 631 (JP '631).

The present invention is directed to a lithium secondary battery comprising an electrode body (including a positive electrode, a negative electrode and a separator) and a non-aqueous electrolytic solution. The battery contains water and hydrofluoric acid in a total concentration of 10,000 ppm or less.

As described in the present specification, page 14, lines 10-19, the "total concentration" refers to the sum of (1) water contained in the non-aqueous electrolytic solution, (2) water adsorbed by various battery members (e.g., electrodes) and (3)

hydrofluoric acid generated from reaction involving the water in (1) and (2). The water in (2) dissolves in the electrolytic solution after the battery is assembled.

The present specification also describes various methods which can be carried out before filling the electrolytic solution into the battery, for reducing the total concentration of water and hydrofluoric acid in the battery. None of the applied references disclose or suggest any such methods, or disclose or suggest reducing the total concentration of water or hydrofluoric acid adsorbed by various battery members prior to filling the electrolytic solution in the battery.

Claim 1 has been amended as set forth above to recite that the total concentration of water and hydrofluoric acid being 10, 000 ppm or less pertains to the *battery* instead of merely the non-aqueous electrolytic solution as originally recited in claim 1. The original specification contains more than abundant support for this amendment, e.g., in the original specification, page 14, lines 10-19. This amendment is made to distinguish a battery, e.g., according to JP '631, which includes a total concentration of water and hydrofluoric acid in excess of 10,000 ppm, regardless of whether some or all of the water originally in the electrodes or other battery components has moved to the electrolyte. Accordingly, the concern expressed in the October 1, 2002 Office Action that ". . . even if there is moisture content on the electrodes, all of the moisture would not dissolve into the electrolyte at the same moment in time" and that ". . . as the concentration gradually increases, from 3-150 to over 10,000 ppm after filling the electrolyte in the battery, the concentration of the filled electrolyte would still be less than 10,000 ppm at some point after filling the electrolyte in the battery."

The position taken by the U.S. PTO is that JP '631 discloses an electrolyte which contains (prior to filling the electrolyte in the battery) water and hydrofluoric acid in a total concentration of 150 ppm or less. JP '631 fails to disclose or suggest any limit on the concentration of water adsorbed by the battery members, or any way for accounting for such water. Water adsorbed by the battery members dissolves into the electrolytic solution after the battery is assembled.

In addition, the Office Action expressed a concern that the applicants had provided no evidence that the electrodes of JP '631 could or would have any moisture, let alone enough moisture to elevate the content of water and hydrofluoric acid to more than 10,000 ppm.

Submitted herewith is a Declaration Under 37 C.F.R. 1.132 which includes a report of an experiment in which a battery was constructed in accordance with JP '631 and in which it was found that the concentration of water and hydrofluoric acid in the electrolytic solution was 12,000 ppm. Since the electrolytic solution is contained within the battery, the concentration of water and hydrofluoric acid in the battery would have to be at least 12,000 ppm.

In view of the above, the disclosure in JP '631 does not anticipate the subject matter of any of claims 1, 2 and 9. Accordingly, reconsideration and withdrawal of this rejection are requested.

In addition, it is respectfully noted that JP '631 fails to contain disclosure which would have made it obvious to make selections so as to arrive at a battery which satisfies all of the features recited in claim 1 as discussed above.

Claims 3 and 4 were rejected under 35 U.S.C.§103(a) over JP '631 in view of U.S. Patent No. 5,807,646 (Iwata '646).

Iwata '646 is apparently relied on in the Office Action for alleged disclosure of lithium-manganese oxide. Accordingly, the alleged disclosure in Iwata '646 which is relied on in the Office Action fails to overcome the shortcomings of JP '631 as attempted to be applied against claim 1, from which claims 3 and 4 each ultimately depend. Accordingly, reconsideration and withdrawal of this rejection are requested.

Claims 5 and 6 were rejected under 35 U.S.C.§103(a) over JP '631 in view of U.S. Patent No. 5,792,577 (Ejiri '577).

The Office Action appears to rely on Ejiri '577 for alleged disclosure of graphitized carbon fibers. Accordingly, the alleged disclosure in Ejiri '577 relied on in the Office Action would fail to overcome the shortcomings of JP '631 as attempted to be applied against claim 1, from which claims 5 and 6 ultimately depend. Accordingly, reconsideration and withdrawal of this rejection are requested.

Claims 7 and 8 were rejected under 35 U.S.C.§103(a) over JP '631 in view of Iwata '646 and Ejiri '577. Iwata '646 and Ejiri '577 are apparently relied on in the Office Action for the disclosure discussed above. Accordingly, as discussed above, Iwata '646 and Ejiri '577 fail to overcome the shortcomings of JP '631 as attempted to be applied against claim 1, from

which claims 7 and 8 each ultimately depend. Accordingly, reconsideration and withdrawal of this rejection are requested.

Claim 10 is rejected under 35 U.S.C.§103(a) over JP '631 in view of U.S. Patent No. 5,709,968 (Shimizu '968) or U.S. Patent No. 6,053,953 (Tomiyama '953).

Shimizu '968 and Tomiyama '953 are apparently relied on for alleged disclosure of use of lithium batteries in electric automobiles. Accordingly, the alleged disclosure relied on in Shimizu '968 and Tomiyama '953 would fail to overcome the shortcomings of JP '631 as attempted to be applied against claim 1, from which claim 1 depends. Reconsideration and withdrawal of this rejection are requested.

Claim 10 was rejected under 35 U.S.C.§103(a) over Tomiyama '953 in view of JP '631. As discussed above, the disclosure in Tomiyama '953 relied on in the Office action fails to overcome the shortcomings of JP '631 as attempted to be applied against claim 1, from which claim 10 depends. Accordingly, reconsideration and withdrawal of this rejection are requested.

Claims 1-10 were provisionally rejected for obviousness-type double patenting over claims 1-8 and 12 of copending U.S. Patent Application Ser. No. 09/770,725 in view of JP '631, German 198 27 631 (DE '631) or WO 99/33471 (WO '471).

As discussed above, JP '631 fails to disclose or suggest a battery as recited in claim 1, wherein the battery contains water and hydrofluoric acid in a total concentration of 10,000 ppm or less. DE 631, like JP '631, merely discloses concentrations of water and hydrofluoric acid in electrolyte which has not yet been filled into a battery. Accordingly, like JP '631, DE '631 fails to disclose or suggest a battery as recited in claim 1, wherein the battery contains water and hydrofluoric acid in a total concentration of 10,000 ppm or less.

Similarly, WO '471, like JP '631, merely discloses concentrations of water and hydrofluoric acid in electrolyte which has not yet been filled into a battery. Accordingly, like JP '631, WO '471 fails to disclose or suggest a battery as recited in claim 1, wherein the non-aqueous electrolytic solution contains water and hydrofluoric acid in a total concentration of 10,000 ppm or less.

U.S. Patent Application Ser. No. 09/770,725 is apparently relied on in the Office Action for subject matter other than subject matter relating to the recitation in claim 1 that the battery contains water and hydrofluoric acid in a total concentration of 10,000 ppm or less.

Accordingly, none of the applied references, or any combination thereof, discloses or suggests a lithium secondary battery containing water and hydrofluoric acid in a total concentration of 10,000 ppm or less, as recited in claim 1.

Reconsideration and withdrawal of this rejection are requested.

In view of the above, claims 1-10 are in condition for allowance.

If the Examiner believes that contact with Applicant's attorney would be advantageous toward the disposition of this case, the Examiner is herein requested to call Applicant's attorney at the phone number noted below.

The Commissioner is hereby authorized to charge any additional fees associated with this communication or credit any overpayment to Deposit Account No. 50-1446.

Respectfully submitted,

February 3, 2003
Date

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

1. (Amended) A lithium secondary battery comprising:

an electrode body obtained by winding or laminating a positive electrode and a negative electrode via a separator, and

a non-aqueous electrolytic solution containing a lithium compound as the electrolyte,

wherein the ~~non-aqueous electrolytic solution~~ battery contains water (H_2O) and hydrofluoric acid (HF) in a total concentration of 10,000 ppm or less.